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THE UNIVERSITY OF ALBERTA

DREAMS AND WAKING EVENTS: EVIDENCE FOR AN AFFECTIVE AND MOTIVATIONAL CORRESPONDENCE

by

DIANE LEE MCGREGOR

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1987

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ISBN 0-315-41148-1

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TITLE OF THESIS DREAMS AND WAKING EVENTS: EVIDENCE FOR AN AFFECTIVE AND MOTIVATIONAL CORRESPONDENCE

DEGREE FOR WHICH THESIS WAS PRESENTED MASTER OF ARTS

YEAR THIS DEGREE GRANTED FALL, 1987

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Dreams and Waking Events: Evidence for an Affective and Motivational Correspondence, submitted by Diane Lee McGregor, in partial fulfilment of the requirements for the degree of Master of Arts.

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Date October 8, 1987

Abstract

This study investigated the affective and motivational correspondence between dreams and waking events. It was proposed that recent and remote, affectively and motivationally similar memories are combined, during dreaming, to form the affective and motivational tone of the dream. To test this model, 6 participants recorded 3 significant events per day for 10 consecutive days. On the 10th night, each participant slept in the sleep laboratory, was awakened from the final REM period of the night, and asked to report a dream. He or she was then asked to reflect on the part of the dream that felt most important and to recall 10 memories associated with that part of the dream. Each participant rated the 30 daily events, 1 dream, and 10 memories on the Personal Events Inventory (PEI), a questionnaire designed to assess the affective and motivational properties of events.

Separate Q-type, principle components factor analyses were performed on each participant's PEI ratings for the daily events. These analyses resulted in classes or types of events. Similarly, separate Q-type, principle components factor analyses were performed on the PEI ratings for the memories. These analyses resulted in types of memories. The characteristic affective and motivational profiles of each participant's event and memory types were then correlated with his/her PEI ratings of the dream.

Averaged across participants, there was evidence of a correspondence between one event type, one memory type, and the dream. Additional analyses revealed that the event type correlating most highly with the dream was characterized by novel affects and motives, nonroutine goals, incomplete goal fulfillment, and emotional involvement. These results are interpreted as support for a model of dream/waking event correspondence in which emotionally significant, recent and remote events combine during dreaming to influence the affective and motivational tone of the dream.

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I. Introduction

A pervasive question in modern studies of dreams concerns the relationship between dreams and waking events. One common assumption is that dreams echo the emotionally significant experiences of daily life. However, because dream reports seldom contain direct reference to any particular waking activity, the relationship between dreams and waking events has been difficult to assess empirically. Despite numerous studies (*cf.* Arkin & Antrobus, 1978), the factors determining dream/waking event correspondence remain unclear.

Freud's (1900/1976) original hypothesis was that recent and remote memories of affectively and motivationally similar events are combined to form the dream. Following Freud, contemporary dream researchers have continued investigation of the affective and motivational similarities between dreams and waking events. Examination of (1) the correspondence between dreams and pre-sleep activities and (2) the correspondence between dreams and memories elicited during dream reflection has suggested an affective link and perhaps a motivational link between dreams and waking events.

However, there are two noteworthy limitations to available research. Studies of pre-sleep activities have typically addressed the dream's correspondence with single pre-sleep events (e.g., viewing a presleep, emotionally involving film). There have been no systematic studies of the dream's correspondence with multiple pre-sleep events. In addition, investigations of the memories associated with dreams have typically emphasized assessment of remote memories independently of the recent events that may also contribute to the dream. There have been no studies which have assessed how both recent and remote pre-sleep events combine to influence the dream. If, as Freud hypothesized, families of affectively and motivationally similar memories combine to form the dream, such combinatory processes may only become evident by examining how multiple recent and remote events shape any particular dream.

While not strictly Freudian, the model of dream/waking event correspondence examined in the present research is that families of recent and remote, affectively and motivationally similar memories are combined during dreaming to form the affective and motivational "tone" (Freud, 1900/1976) of the dream. Specifically, at some time within the

few days preceding the dream, events occur which create a feeling state involving particular affects and motives. This affective and motivational configuration then activates remote memories with similar qualities. During dreaming, the memories for both recent and remote events are combined in such a way that their affective and motivational properties are preserved in the narrative structure of the dream.

The preceding model of dream/waking event correspondence enables three predictions. First, if recent affects and motives are the impetus of dreams, then some events that have occurred within a few days of the dream should have affective and motivational properties similar to those contained in the dream. Second, if recent events are combined with older, affectively and motivationally similar events during dreaming, then dream reflection should prompt recall of remote memories that are affectively and motivationally similar to the dream. Third, if the previous two hypotheses are correct, then the memories elicited during dream reflection should be affectively and motivationally similar to the recent events which have initiated the dream. The goals of this study were to test these hypotheses.

A. Determinants of Dreams: Recent Events

One implication of the proposed model of dream/waking event correspondence is that recent affects and motives influence dream affects and motives. This influence is both (1) direct, in that memories of recent pre-sleep events are part of the memory set combined to form the dream, and (2) indirect, in that qualities of pre-sleep events determine which remote memories are activated and combined to form the dream. Although research does not enable differentiation of such direct and indirect effects, the influence of recent affects and motives on dreams is substantiated by experimental research in which pre-sleep events have been manipulated.

First, there is evidence of a correspondence between pre-sleep affect and dream affect. In one study, Goodenough, Witkin, Koulack and Cohen (1975) found that research participants who reported feeling anxious following a stressful pre-sleep film also reported more anxiety in their dreams, and their dreams were rated by judges as containing more anxiety on the night following the stressful film than on the night following a neutral film.

Similarly, Koulack, Prevost and DeKoninck (1985) found that participants who engaged in a stressful intellectual activity prior to sleep reported themselves as anxious in their dreams significantly more often than participants who engaged in a non-stressful pre-sleep intellectual activity. Finally, Kuiken, Rindlisbacher and Nielsen (1984) found that when participants reflected on their feelings about an emotionally involving film, affective reactions to the film were similar to affective reactions in subsequent dreams. Such correspondence was not found when participants reflected on the aesthetic qualities of the film. Taken together, the results of these studies support the hypothesis that pre-sleep affect is one determinant of dream/waking event correspondence.

There is limited experimental evidence that recent motives are another determinant of dream/waking event correspondence. Hoelscher, Klinger and Barta (1980) found that words which had been selected from participants' disclosures of their current goals and then presented during REM sleep prompted dream images with goal-related themes. Words pertaining to other participants' goals had no such effect. Because the goals disclosed by participants were recent strivings ("current concerns"), the Hoelscher *et al.* data confirm that recent motives influence dream content. However, because the reminders of participants' recent motives were presented during rather than prior to sleep, the causal role of the presleep events *per se* remains unclear. Accordingly, there is only limited evidence that recent motives, like recent affects, determine dream/waking event correspondence.

The evidence from the preceding studies is consistent with the hypothesis that recent affect and motives correspond with dream affects and motives. Generally, however, these findings have not been particularly robust (Arkin & Antrobus, 1978); numerous studies have been conducted in which investigators have failed to find evidence of a correspondence between presleep conditions and dreams (e.g., Karacan, Goodenough, Shapiro, and Starker, 1966). One reason for these failures may be an inappropriate emphasis on single emotionally significant events. There may be no single event which initiates dreaming but, instead, a series of affectively and motivationally similar presleep events might collectively precipitate the dream. If so, consideration of the cumulative impact of similar events over several days prior to the dream might enable more reliable demonstrations of dream/waking event

correspondence.

A second reason for the failure to consistently demonstrate an affective and motivational correspondence between presleep conditions and dreams may be researchers' focus on events which occur immediately prior to sleep. Limiting attention to immediate pre-sleep events may be inappropriate because there is evidence that a delay occurs between an emotionally significant event and its incorporation into a dream. Cartwright, Bernick, Borowitz, and Kling (1969) reported such a delay in a study investigating the effects of pre-sleep events on dreams. They presented young men with an erotic film prior to sleep and found that the most frequent incorporations occurred on the second night following the film, not on the night of the film as expected. Also, Verdone (1965), asked research participants to estimate the time period with which dream elements (e.g., scenes, characters, etc.) were associated. He found that, while estimates ranged from "earlier this evening" to "greater than 5 years ago", the most frequently estimated time period was "the past week", not "yesterday". The delay between an event and it's impact on dreaming sleep is also consistent with recent research on REM sleep deprivation. Smith and Kelly (1986) found that learning in rats was most impaired when REM deprivation occurred 48 to 60 hours after the last training session, suggesting a delay before information was processed during REM sleep. In sum, one reason researchers have frequently failed to find evidence of a correspondence between pre-sleep events and dreams is that the effects of emotionally significant events on dreams are more likely to be manifest 2 to 3 days after the event than they are immediately following the event.

The present research was designed to extend previous results concerning dream/waking event correspondence by taking into account the influence of multiple pre-dream events on dream formation and the delay before an emotionally significant event is echoed in the dream. To do this, it was proposed that over several days prior to a dream, a series or family of affectively and motivationally similar events would occur. The characteristic affects and motives of this family of events would then initiate a dream with similar properties. Specifically, the first hypothesis was that (a) the affective and motivational structure of a family of similar events occurring over a period of several days prior to the dream would

correspond with the affective and motivational structure of the dream, and (b) the events of the family corresponding with the dream, would, on the average, occur 2 to 3 days prior to the dream.

B. Determinants of Dreams: Remote Events

A second implication of the proposed model of dream/waking event correspondence is that remote memories, with affective and motivational qualites similar to those of the recent events, also contribute to the affective and motivational tone of the dream. Direct evidence for this relationship is clearly difficult to obtain. Remote events cannot be manipulated in the same manner as the recent events reviewed in the previous section. Nevertheless, some existing research is compatible with this aspect of the present model.

One approach to investigating the relationship between dreams and memories has been to elicit memories as "associations" during dream reflection and assess their relationship to the dream. With this approach, there is evidence that dream associations include references to remote events. Freud (1900/1976) observed that dream-prompted memories covered a broad time span; some memories were of events that had occurred within the few days preceding the dream, and others were of events that had occurred at a more remote time, often as far back as childhood. Other researchers have obtained similar results. For example, Palombo (1984) asked research participants to reflect on their dreams and consistently found references to early childhood memories. Also, Verdone (1965) found estimates of the time period with which dream elements were associated ranged from "earlier this evening" to "greater than 5 years ago". In sum, the memories elicited during dream reflection include--but are not limited to--memories for remote events.

When memories are elicited as dream associations, there is evidence that their affective and motivational qualities correspond with the affective and motivational qualities of the dream. With regard to affect, Shephard and Karon (1964) found that judges' ratings of hostilty in the dreams of psychiatric patients were significantly correlated with ratings of hostility in their dream associations. Similarly, in a case study reported by Baylor and Deslauriers (1986), they constructed a semantic network of a dream sequence and an

associated memory and then identified the common elements of each network (e.g., character, action, affect, etc). They found that affect was one of the links between the dream sequence and the associated memory. Finally, McGregor and Kuiken (1986) found that participants who reflected on the affective significance of a dream recalled memories that were affectively similar to the dream. Affectively similar memories were not recalled when participants reflected on the affective significance of a fantasy. Thus, there is evidence that the affective properties of the memories that become available during dream reflection correspond to the affective properties of the dream.

With regard to a motivational correspondence between dreams and remote events, the evidence is limited to associations elicited during intensive study of individual cases. Usually, it is suggested that dreams and their associated memories refer to the emotional concerns or "wishes" of the dreamer (*cf.* Freud, 1900/1976; Palombo, 1978; Greenberg & Pearlman, 1975). The ambiguity of evidence presented in such case histories is well known. However, if it is assumed that completion of personality inventories regarding long standing (remote) motives is an indication of remote events, then data reported by Domino (1976) are relevant to the present argument. Domino found substantial correlations between need-oriented personality characteristics and judges' assessments of the presence of those characteristics in dreams. Thus, long term motives related to personality traits corresponded with the motivational characteristics of dreams. While these data only bear indirectly on the present argument, they do suggest that the motivational aspects of remote events influence dream content.

The results of the preceding investigations of memories recalled during dream reflection fairly consistently indicate that remote memories are affectively and motivationally similar to the dream. Accordingly, the second hypothesis of this study was that the affective and motivational structure of the dream would correspond with the affective and motivational structure of a family of memories elicited during dream reflection.

There is a limitation to the research discussed above. The utility of the dream association approach depends upon the assumption that memories elicited during dream reflection are from among those that have formed the dream. This implies that the memories

were active during dreaming. However, because the memories are only elicited after the dream has occurred, it is possible that the dream may prompt recall of past events independently of whether the memories were active during dreaming. Perhaps the dream is simply a waking reminder of the past. The available evidence cannot discount this possibility. Consequently, there is no conclusive evidence that memories identified after the dream has occurred contributed to formation of the dream.

On the other hand, the limitation of previous research might be minimized by assessing recent events independently of the dream. Specifically, recent events could be recorded over a period of time prior to a dream. A correlation between a family of these events and the dream (e.g., Hypothesis One), would not be limited by the difficulties of post-dream recall. This correlation would then be evidence suggesting that these recent events contributed to formation of the dream. Of course, remote memories cannot be assessed independently of the dream. However, if recent and remote events are combined during dreaming to form the affective and motivational tone of the dream, then the recent events collected prior to the dream should correlate with the remote events elicited from the dream. Therefore, the third hypothesis of this study was that the affective and motivational structure of the family of recent events corresponding with the dream would correlate with the affective and motivational structure of the family of remote memories corresponding with the dream.

C. Summary

In sum, the model of dream/waking event correspondence proposed in this research enables 3 predictions:

> Hypothesis One: (a) the affective and motivational structure of a family of events occurring over a period of several days prior to a dream would correlate with the affective and motivational structure of the dream, and (b) the events of the family correlating with the dream, would, on the average, occur 2 to 3 days prior to the dream.
>
> Hypothesis Two: the affective and motivational structure of the dream would correlate with the affective and motivational structure of a family of memories elicited during dream reflection.
>
> Hypothesis Three: the affective and motivational structure of the family of recent

events correlating with the dream would correlate with the affective and motivational structure of the family of remote memories correlating with the dream.

This study was intended as a preliminary step toward an empirical description of the correspondence between dreams and waking events. While the present model states that affects and motives are determinants of dream/waking event correspondence, the hypotheses of this study were tested with correlational data. Therefore, further research will be necessary to investigate the causal contribution of affects and motives to dream formation.

The preceding review indicates that there is support in the dream research literature for the hypotheses of the present research. There is evidence to suggest that dreams are initiated by recent affects and motives, and that memories prompted by dream reflection correspond to the affective and motivational properties of the dream. What is lacking from the existing research is consideration of (1) the cumulative impact of recent, affectively and motivationally similar events on dreams and, (2) the relationship between the pre-dream events and the memories recalled during dream reflection. The proposed research was intended to address these issues.

II. Method

A. Participants

Six people who were frequent dream recallers (at least 3 dreams recalled per week), who expressed interest in self reflection and personal insight, and who had sufficient time available to meet the demands of the study were approached by the experimenter and asked to participate in this study. Each person was fully informed about experimental procedures prior to making a commitment to participate, although descriptions of the hypotheses and goals of the study were not provided until participation was complete. Individuals who agreed to participate were then given a consent form to read and sign. Upon completion of the study, participants were given $20.00 as a token of appreciation for their efforts.

These participants clearly represented a select sample of individuals. However, because the present study was exploratory and particularly demanding of participants' time and self reflective efforts, it was felt that a selection of "ideal" participants was necessary. Because they may be more likely to complete the study than individuals not particularily interested in self-reflection, individuals intrinsically interested in the topic and tasks of the research were solicited. Secondly, people who tend to be self-reflective and who are frequent dream recallers may also be sensitive to personal affects and motives. If affects and motives are the important link between dreams and waking events, as hypothesized, this link was more likely to be detected among this sample of individuals than among individuals who do not typically attend to personal feelings and goals. It was expected that the results of this exploratory study would contribute to the development of more specific hypotheses regarding the dream/waking event correspondence. These hypotheses could then be examined with a more diverse group of individuals.

B. Procedures

This study was conducted over 11 consecutive days. The first day was designed as an orientation to the laboratory and to the procedures. Following a tour of the laboratory, participants completed an autobiographical memory task. For the next 10 days participants kept a diary of 3 significant events per day. On the 10th night, each participant slept in the sleep laboratory, was awakened from the last REM period of the night and asked to report the dream. Following this, the participant was given instructions for reflecting on the dream and recalling memories associated with it. Each event, dream, and memory recorded during the 10 day period was also scored on the Personal Events Inventory (PEI), a 65-item inventory designed to assess the affective and motivational properties of an event. Detailed descriptions of these activities are given below. The PEI will be described in the following section.

Autobiographical Memory Session

The autobiographical memory session was intended to introduce participants to the general procedures and expectations of the study. The procedure used during this session was a modification of the standard semantic cueing paradigm used in research on autobiographical memory (Robinson, 1976). Ten action verbs were used as memory prompts. Each verb was presented one at a time and the participant was instructed to imagine enacting the verb, noticing any memories that came to mind. A modified version of the T.A.T. story format (Murray, 1971) was used to report the memories. The participant was asked to describe the focal point of the memory, the events which led up to the focal point, and the outcome. All memories were then scored on the PEI. (The data collected during this session will be analyzed at a later time.)

Personal Events Diary

Following the autobiographical memory session, participants were issued materials and instructions for recording 3 significant events per day for the next 10 days. The materials

included instructions to (1) reflect on the events of the day, choosing the three that felt most important, (2) record the focal point of each event, the circumstances that led up to it, and the outcome, and (3) score the affective and motivational properties of each event on the Personal Events Inventory. (The complete instructions for the Personal Events Diary are presented in Appendix 2.)

One purpose of the present study was to expand the time period within which "pre-sleep" events were assessed. A 10 day period was selected for this purpose. It was expected that within this time period the contribution of numerous recent events to dream formation might be assessed. Secondly, if there is a 2 to 3 day delay between the occurrance of an emotionally significant event and its incorporation in the dream, as suggested by previous research (e.g., Cartwright, *et al.*, 1969), this procedure ensured ample time for the effects of initiating events to be manifest.

Dream Laboratory Night

The participant arrived in the Sleep Laboratory approximately 1 hour before his or her normal bedtime. Electrodes to monitor EEG and EOG activity were applied, during which time the wake-up and dream reporting procedures were explained.

The first awakening occurred 15 minutes into the fourth REM period of the night. Participants were asked to recall and then report the preceding dream. He or she was then asked to select one segment of the dream that felt most important and to rate that segment of the dream on the PEI. The participant was then allowed to return to sleep. This first awakening was intended to familiarize participants with the wakeup procedures. The dream collected at this time served as a backup dream in the event that a dream was not recalled on the final awakening. All participants recalled a dream on the second awakening. Therefore the first awakening dream was not included in the analyses.

The final awakening occurred 20 minutes into the last REM period. Again, the participant was awakened, asked to recall and report a dream, select one segment of the dream that felt most important, and rate that segment on the PEI. Following a short break,

during which the electrodes were removed, the participant returned to the sleep chamber and settled into a comfortable position. (The detailed wake-up and dream recall procedures are presented in Appendix 3.)

The participant was then given instructions for reflecting on the affective significance of the dream segment and asked to report any memories that came to mind during the reflection period. The reflection period included instructions to identify whatever felt most important about the dream segment, to find a phrase, image, or gesture that characterized the quality of that feeling, and then to remember an earlier event that was, in some way, like that phrase/image/gesture. The participant was asked to give a brief description of the memory that came to mind and then was asked to return to the same phrase/image/gesture and notice other memories associated with it. This step was repeated until the participant recalled 5 remote memories. The participant was then asked to refocus his/her attention on the dream segment and identify something else that felt important in the segment. The entire sequence of reflection and memory recall instructions was then repeated.

The goal of this reflection/memory recall task was to elicit 10 remote memories from the dream. A remote memory was defined as any event that had occurred prior to the 10 day period in which personal events were recorded. Thus, a remote memory was any event that was 11 or more days old. The interview ended when 10 remote memories were recalled. (The dream reflection and memory elicitation instructions are presented in Appendix 4.)

The final task was to complete the PEI for each reported memory. This was done with the participant seated comfortably at a desk immediately outside the sleep chamber. Once this task was complete, the participant was debriefed about the goals and purpose of the study, and encouraged to ask questions and provide comments.

C. Dependent Measures

The Personal Events Inventory: PEI

The PEI is a self-report inventory designed to assess the affective and motivational properties of recent events, dreams, and dream-prompted memories. It was constructed from existing scales and questionnaires and was divided into four sections. Section 1 assessed affect (e.g., angry, sad), Section 2 assessed goals (e.g., affiliation, dominance), Section 3 assessed goal-directed actions (e.g., get, keep), and Section 4 assessed various attributes of goal fulfillment (e.g., success, involvement). Each item was rated on a 5 point scale where 1 indicated that the affect, goal, etc., was not at all descriptive of that event and 5 indicated that the affect, goal, etc. was extremely descriptive. (The complete PEI is presented in Appendix 1.)

This comprehensive rating scale for affects and motives provides an advantage for the present study. Properties of dream content, such as affects and motives, are particularly difficult to determine because they are seldom explicitly stated in the dream. Use of the PEI eliminated the ambiguities inherent in judges' assessments of reported experiences and provided a means of quantifying affects and motives.

A discussion of the source and content of the four sections contained in the PEI follows.

Section One: Affect

Section 1 is a mood scale consisting of 36 emotion adjectives. It was designed to be relatively brief and to cover a range of possible feelings and emotions. The adjectives were selected from three existing mood scales: (1) the Differential Emotions Scale (DES; Izard, Dougherty, Bloxom, & Kotsch, 1974), a 30-item scale designed to measure the 10 basic emotions described by Izard (1977), (2) the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971), a 64-item scale designed to assess a range of transient mood states, and (3) the Mood Adjective Check List (MACL; Nowlis, 1965), a 49-item checklist covering a range of possible mood states. Mood adjectives were selected

for the PEI so that the resulting scale would (1) include 2 to 3 items reflective of each of the 10 basic emotions described by Izard (1977), e.g., happy, angry, (2) include 2 or 3 items from POMS and MACL factors which were not redundant with the 10 basic emotions, e.g., energetic, tense, and (3) include a mixture of positive, negative, and neutral items. On completion, the mood scale consisted of 36 items: 10 positive emotion adjectives, 7 neutral adjectives, and 19 negative emotion adjectives.

Section Two: Goals

Section 2 of the PEI consisted of 13 words and statements describing different goal types. The goal types were selected from two sources: the Scoring System for Latent Structure (SSLS; Foulkes, 1978) and the Structural Analysis of Stories (SAS; Kuiken and Nielsen, Note 1). In constructing the goal types for the PEI, the goal types used in SSLS (e.g., moving toward, moving against, moving away, and creating) were chosen as general categories, and the specific goal types from the SAS were chosen to elaborate the specific categories (e.g., moving toward: nurturance, affiliation, sexual interaction).

Section Three: Actions

Section 3 consisted of 7 verbs describing general types of goal-directed actions. They were selected from the Concern Dimensions Questionnaire (CDQ; Klinger, Barta & Maxeiner, 1981), a questionnaire designed to assess various attributes of current concerns. The verb categories on the CDQ were intended to be an indication of an individual's desires regarding the object of his or her concern. That is, the verbs indicate whether an individual wished to get something, keep something, avoid something, etc.

Section Four: Attributes of Goal Fulfillment

The final section of the PEI consisted of 9 statements designed to assess properties of goal fulfillment. These items were added to assess properties such as success/failure in goal fulfillment, commitment, involvement, and novelty. It was expected that the goal properties might be differentially associated with the event families corresponding with the dream.

III. Analysis and Results

The goals of this study were to test the following hypotheses: (1) the affective and motivational structure of a family of events occurring over several days prior to a dream would correlate with the affective and motivational structure of the dream, (2) the affective and motivational structure of a family of memories prompted during dream reflection would correlate with the affective and motivational structure of the dream, and (3) the affective and motivational structure of the family of events correlating with the dream would correlate with the affective and motivational structure of the family of memories correlating with the dream.

The data analysed in this study consisted of participants' ratings of the items on the PEI for 30 daily events, 1 dream, and 10 dream-prompted memories. (Note: Participant 2 misplaced her response sheet for 1 daily event. Therefore, the total number of daily events for this individual was 29.)

A. Daily Event/Dream Correspondence

A summary of the analytic steps used to assess the correspondence between properties of dreams and properties of families of waking events is presented in Table One. Step 1 in the analyses was to identify clusters of affectively and motivationally similar daily events. To do so, the PEI ratings of each participant's daily events were subjected to a Q-type factor analysis, a form of numerical analysis which identifies different clusters of entities (QUANAL, Van Thubergen, 1978). Specifically, a Q-type, principle components factor analysis (common factor model, with unity in the diagonals) was used to cluster events with more or less similar ratings into daily event types. Only the 56 affect, goal, and goal-directed action items from the PEI were used in the factor analysis. Therefore, the resulting types are interpretable as families of affectively and motivationally similar events.

A separate factor analysis was performed on the data provided by each participant. For all cases, a scree test (Cattel, 1966) indicated that 4 factors should be retained for further analysis. These 4 factors were then submitted to a Varimax rotation in order to estimate simple structure in the factor array. However, after 100 iterations, the Varimax criterion did

Table 1
Summary of Analytic Steps used to Assess Daily Event/Dream Correspondence

Step	Purpose	Statistical Procedure
1	For each participant, identify clusters of affectively and motivationally similar events, i.e., event types	Q-type, principle components factor analysis of ratings of the 56 PEI items for 30 daily events
2	For each participant, identify affective and motivational profiles characteristic of each event type	Calculate 56-item array of z-scores summarizing the PEI ratings of the events in each event type
3	For each participant, assess the correspondence between event types and the dream	Correlate the z-score array for each event type with the PEI ratings of the dream
4	For each participant, identify the event type correlating most highly with the dream; assess the reliability of the mean of these correlations	*t* test comparing the mean of the highest event type/ dream correlations with zero
5	For the event types correlating most highly with the dream, identify features that predicit dream/waking event correspondence	(a) Chi Square test of the distribution across the 10 day period (b) Oneway ANOVA comparing event types in the order extracted during factor analysis (c) Oneway ANOVA comparing event types on ratings for each of the 9 goal properties from the PEI

not reach a stable maximum for Participant 2. Consequently, her data were submitted to an Oblimax rotation (which allows correlated factors).

During the rotation phase, QUANAL evaluated the factor matrix for the presence of bi-polar factors, i.e., factors in which greater than 25% of the loadings were negative. When this was detected, QUANAL removed the negatively loading events from that type, made the loadings positive, and formed a new type. Due to this bi-polar splitting, the results of the

factor analyses for the 30 daily events varied somewhat among participants. For 3 of the participants (Participants 1, 4, and 5) no factors were split and the number of types equalled the number of factors (i.e., 4). For each of the other 3 participants (Participants 2, 3, and 6), one factor contained a significant proportion of negatively loaded events. For these participants, that factor was split, resulting in a total of 5 types. (The number of events per type for each participant is presented in Table 2).

The event types which emerged from the factor analyses were interpreted as maximally independent families of affectively and motivationally similar daily events. Each type was comprised of a varying number of events, as indicated by Table 1. In order to demonstrate how families are comprised of affectively and motivationally similar events and how families differ from each other, the following exerpts from the transcripts of daily events provided by Participant 1 are presented. The first 3 events are all members of the family of events represented by Event Type 1.

> I had a girlfriend of mine over for lunch. She is beautiful and successful and I generally find her intimidating but I also enjoy her company very much. I was feeling drowsy and my eyes were tired when she arrived and she looked as beautiful as ever. I was wondering if I'd get through lunch with her without feeling intimidated and blushing. A few times during our discussion I realized I was not feeling intimidated and that is a relatively new experience for me. She complimented my hair and new glasses which helped. It was the realization that I felt confident throughout that felt important.
>
> I went to a friend's for tea. We sat at the dining room table and drank tea while her boyfriend watched tv in the livingroom. Often I have felt intimidated by her confidence and the wholesome attractiveness of her. But the conversation went by very pleasantly with some fairly intimate information discussed and I did not feel insecure. I felt affirmed, interesting and laughed alot.
>
> A friend of mine dropped by for supper. We were talking about nothing in particular when the phone rang. It was another friend of mine from up north. He offered to do my income tax return for me without my even mentioning it. I thought that was a very sweet offer, and it made me feel cared for.

In contrast, the following 3 events were derived from Event Type 2.

> I attended the funeral of a classmate's husband this afternoon. I found myself close to tears twice before the service started. However, the music was so sentimental that it was hard to get emotionally involved. Afterwards, I spotted another classmate and I pulled on his sleeve and said hello. He turned his head stiffly, said an abrupt "Hi" and turned away to the fellow he was with, although he did not start talking to him. It was a distinct snubbing. I looked at my companion and we shrugged.
>
> One of my classmates is organizing a project of mine. During a break in class today,

Table 2
Event Type and Number of Events per Type, for each Participant

Participant	Event Type 1	2	3	4	5
1	15	3	10	2	-
2	10	5	6	5	2
3	10	8	2	8	3
4	15	3	3	9	-
5	10	10	7	3	-
6	10	6	6	2	6
Mean	11.7	6.5	5.7	4.8	3.7

she showed me the list she had posted to get volunteers to help. When I read the write-ups of the positions, I felt very strongly that K had given the wrong interpretations to 2 of the roles. I said this very forcefully. When I react to things in a negative manner, I usually feel my reaction almost hit me in the face and then absorb into the rest of my body. After thinking about it, K agreed to change the descriptions.

I had spent the afternoon tutoring B, a 14 year old, in French. After one of these sessions, his parents usually ask me to dinner. B's brother L is an outgoing, appealing boy but he turns into a tyrant around his siblings. His mother and I often have discussions about how to deal with him. Today, at dinner, he made some rude comments to one of the girls and I reprimanded him. About a minute later, his father gave me an appreciative look. It made me feel more comfortable about free expression and discipline of the kids in front of the parents.

According to Hypothesis One, for each participant, the affective and motivational properties of one of the event types obtained in the factor analysis would correlate with the affective and motivational properties of the dream. To examine this possibility, the second step in the analyses was to determine the affective and motivational profiles characteristic of each event family. The QUANAL program provided a means for calculating the relative contribution of the PEI ratings on each event to the event type, thus determining the affective and motivational structure of each event type. QUANAL calculated standardized arrays of z-scores for each of the types from weighted factor values for each type. This array of

z-scores corresponded to the 56 PEI items and represented a summary of the PEI ratings from the events in the event type. High positive z-scores (i.e., greater than +1) indicated that a particular item was given a high score across all the events in the event type, z-scores near 0 indicated that there was variablity among the ratings on a particular item, and high negative z-scores (i.e., less than -1) indicated an item was given a low score across all events in the event type. Items with z-scores greater than +1 constituted the affects and motives most characteristic of an event type. For example, the affective and motivational characteristics of the 2 event types described above were as follows:

> Event Type 1: happy, playful, cheerful, self-centered, relaxed, affiliation, self-enhancement, keep
>
> Event Type 2: guilty, angry, surprised, disgusted, attentive, nurturance, dominance, restore.

The third step in the analyses was to assess the correspondence between an event type and the dream. To do this, the 56 z-scores for each type were correlated with the 56 PEI ratings of the dream. The correlations for all types and for each participant are presented in Table 3. The fourth step was to identify the event type corresponding most highly with the dream, and average these correlations across participants. The correlation between the dream and the event type correlating most highly with the dream was significant for each participant ($p<.001$). Also, a t test revealed that the average correlation between the dream and the event family correlating most highly with the dream ($M=.56$) was reliably different from zero [$t=12.899$, $p<.001$], confirming Hypothesis One. (Because the correlations selected for analysis were determined on the basis of data examination, this t test was comparable to an *a posteriori* contrast. Therefore, it should be regarded as a a liberal assessment of the reliability of the mean correlation.)

The dream provided by Participant 1 follows. For this participant, Event Type 2 (the second set of events presented above) was the event family corresponding most highly with the dream. The most characteristic affects and motives for this dream were: attentive, vulnerable, nurturance, dominance, affiliation, get. The part in italics indicates the part of the dream the participant identified as "most important".

Table 3
Correlations between the Dream and Event Types, for each Participant

Participant	Event Type 1	2	3	4	5
1	.20	.56	.31	.14	-
2	.62	.27	.14	.42	.09
3	.56	.01	.59	.68	-.23
4	.01	.47	.35	-.14	-
5	-.03	.49	.26	-.03	-
6	-.47	-.13	-.27	-.19	.53
Mean	.15	.28	.23	.27	.13

I was going to work in a group home with lower functioning kids but I had to stop at another group home to pick up a film. The worker at the other home seemed almost like the kids' mother because she was smoking and reading a newspaper. I think she was a worker on shift. But I am not sure. It seemed like their mom. She seemed kind of lower functioning herself. The TV was on, there were 2 kids, everybody in the room was quite a bit overweight. *I remember feeling kind of uneasy because of the woman's reaction. She didn't seem all that happy to see me there. So when I sat down on the sofa, I sat down quite tentatively. Not afraid, just not feeling terribly welcome.* Just as I sat down, a worker who had dropped the film off for me just before I came to this place, walked in as well. We were surprised to see each other. You know, kind of cheerful and all that.

The results of the above analyses confirm that a family of daily events is reliably correlated with the dream. The question arises, then, about features of the correlating family of events that might distinguish it from the other event families. One possibility was predicted by an extension of Hypothesis One. Specifically, it was predicted that the daily events comprising the event type corresponding with the dream would occur 2 to 3 days prior to the dream more often than at any other time during the 10 day diary period. Perhaps, then, a delay between the events and the dream distinguishes the corresponding event family from the other families.

Table 4
Distribution of Events from the Event Family Correlating Most Highly with the Dream, Across the 10 Day Diary Period

	Interval						
	A	B	C	D	E		
Days Prior to Dream	8/9	6/7	4/5	2/3	1/DD[1]	N	Expected Freq/Int
Number of Events	5	11	6	8	9	40	8

[1]Note: DD=Dream Day

Step 5(a) of the analyses was intended to test this hypothesis. The date of each event from the event family correlating most highly with the dream was determined. The frequency of these events across the 10 days of the diary period was tabulated and then combined into 48-hour intervals of "days preceding the dream". Thus the number of events per 2-day interval was determined (Interval A = 8 and 9 days prior to the dream, Interval B = 6 and 7 days prior to the dream, etc. The final interval, E, = the Dream Day and 1 day prior to the dream). Table 4 presents the distribution of the events from the event family correlating most highly with the dream across the 5 intervals of days preceding the dream. From the factor analysis, this event family was comprised of a varying number of events for each participant and a total of 40 events was included in this analysis. A Chi Square test of the observed distribution compared to an expected distribution of equal numbers of events per interval indicated that the observed frequency did not differ from the expected frequency (Chi Square(4)=2.875, n.s.). Thus, the event family correlating most highly with the dream was not predicted by a delay between the occurrance of its events and the dream.

Another distinguishing feature of the event family corresponding most highly with the dream may be that the corresponding family reflects the predominant mood of the 10 day period, and it was this predominant mood that was incorporated into the dream. Step 5(b) of the analyses assessed this possibility. The event types presented in Table 1 are listed in the

order in which they emerged from the factor analysis. Type 1 is the first event type, accounting for the greatest proportion of the variance, Type 2 is the second, accounting for the greatest proportion of the remaining variance, etc. The first type to emerge from the analysis explains the greatest proportion of the variance and, on the average, contains the largest number of events. Therefore, it is interpretable as the event type which characterizes the predominant mood of the 10 day period prior to the dream. Likewise, the remaining 3 event types are interpretable as families characterizing moods less pervasive during that period.

If dreams reflect the predominant mood experienced by an individual during a particular period of time, then it could be expected that the mean correlation for Event Type 1 would be greater than the mean correlations for the other event types. However, Type 1 correlated most highly with the dream for only 1 participant, and, if anything, the average correlation between Type 1 and the dream tended to be lower than the average correlations of each of the other 3 types. In fact, when the correlations were transformed into z-scores and submitted to a oneway analysis of variance (ANOVA), there were no differences in the mean correlations for the 4 types [$F(3,20) = .1277$, n.s.]. (Note: to maintain an equal number of event types per participant, the event type containing the fewest number of events for those participants with 5 types was deleted from this analysis.) Thus, the family of events characterizing the predominant affective and motivational mood of the 10 days prior to the dream is not associated with the affective and motivational structure of the dream.

Instead, the results of the previous analysis suggest that event types which emerge later in the factor analysis are more likely to correlate with the dream. That is, it seems that a family of events which departs from the predominant mood of the period accounts for the affective and motivational correlation between the highest event family and the dream. Specifically, 5 out of 6 participants provided data where the most highly correlating event types were independent of the predominant mood of the 10 day period, i.e., they were from Events Types 2, 3, or 4.

To further clarify the distinguishing characteristics of the corresponding event family, the 9 PEI statements assessing various properties of goal fulfillment were examined (step 5(c) in the analyses). These items were included on the PEI in order to determine properties of goal fulfillment which might predict daily event/dream correspondence. They had not been included in the previous factor analyses. The items were as follows: success at goal fulfillment, goal committment at the time of the event, goal committment while remembering the event, involvement in goal fulfillment, emotional involvement during the event, the personal importance of the event, the extent to which the event was planned, the routineness of the goal, and whether the goal is one normally strived for.

First, to clarify the nature of the event types that constituted departures from the predominant affective and motivational tone, a oneway ANOVA was perfomed on each goal property. When the F statistic indicated significant overall differences, Event Type 1 was contrasted with all others. Because there were varying numbers of events in the 4 event types, the ratings for the events in each type were averaged for each participant. Only 2 of the 9 goal properties were differentially associated with the 4 event types: Goal routineness and goal success. The goal routineness item ("Was your attempt to fulfill your goal a routine part of your life?") was scored such that low ratings indicated "not at all routine", and high ratings indicated "very routine". Results of the ANOVA assessing this goal property indicated that there was an overall difference among the means [$F(3,20)=3.36$, $p<.05$]. The contrast between the mean of the predominant mood family and the mean of the 3 departure from the predominant mood families indicated that the routineness ratings were reliably greater for the predominant mood family (M=3.3) than the combined departure families (M=2.4) [$t(20)=2.18$, $p<.05$)]. Similarly, the success item ("At the time of this event, how successful were you at fulfilling your goal(s)?") was scored such that low ratings indicated failure and high ratings indicated success. Results of the ANOVA indicated that there was an overall difference among the means [$F(3,20)=3.40$, $p<.05$]. Likewise, the contrast between the mean of the predominant mood family and the mean of the 3 departure from the predominant mood families indicated that the success ratings were reliably greater for the predominant

mood family (M=4.0) than for the combined departure families (M=3.4) [$t(20)=2.32$, $p<.05$)]. Together, these results suggest that the predominant mood family is differentiated from the departure families by having routine goals which are successfully fulfilled. By implication, the departure from the predominant mood families are characterized by non-routine, incompleted goals.

Comparisons were also made to assess whether the most highly correlated departure family could be differentiated from the other departure families on any of the 9 goal properties. These comparisons revealed that one goal property (emotional engagement) marginally differentiated the most highly correlated departure family from the others. The emotional engagement item ("How emotionally engaged were you during this event?") was scored such that low ratings indicated lack of emotional involvement, high ratings indicated a great deal of emotional involvement. A t test revealed that the emotional engagement ratings for the most highly correlated departure family (M=3.3) were greater than the emotional engagment ratings for the mean of the other 2 departure families (M=2.7) [$t(20)=2.01$, $p<.06$].

Taken together, the preceding analyses suggest that a combination of goal properties characterize the event family most highly associated with the affective and motivational structure of the dream. Specifically, goal non-routineness and incomplete success are associated with departures from the predominant mood. When such departures from the predominant mood are also emotionally engaging, that family of events becomes a likely source of the affective and motivational mood of the dream.

B. Memory/Dream Correspondence

The second hypothesis of this study was that the affective and motivational structure of memories elicted during dream reflection would correlate with the affective and motivational structure of the dream. To test this hypothesis, it was necessary to identify types of memories and then to correlate the properties of the memory types with the properties of the dream. Table 5 presents a summary of the analytic steps used to assess the correspondence

Table 5
Summary of Analytic Steps used to Assess Memory/Dream Correspondence

Step	Purpose	Statistical Procedure
1	For each participant, identify clusters of affectively and motivationally similar memories, i.e., memory types	Q-type, principle components factor analysis of ratings of the 56 PEI items for 10 memories
2	For each participant, identify affective and motivational profiles characteristic of each memory type	Calculate 56-item array of z-scores summarizing the PEI ratings of the memories in each memory type
3	For each participant, assess the correspondence between memory types and the dream	Correlate z-score array for each memory type with PEI ratings of the dream
4	For each participant, identify the memory type correlating most highly with the dream; assess the reliability of the mean of these correlations	*t* test comparing the mean of the highest memory type/ dream correlations with zero
5	Assess whether the order in which memories were recalled predicts memory/dream correspondence	Kruskal-Wallis test of rank-order comparisons between the memory family correlating most highly with the dream, and the other memory family

between properties of families of memories and properties of dreams.

Step 1 assessed the similarity among the memories. To do this, the PEI ratings of the 10 dream-prompted memories were submitted to a Q type factor analysis. A separate factor analysis was performed on the data provided by each participant. For 5 participants, a scree test (Cattel, 1966) indicated that 2 factors should be retained for further analysis. For Participant 5 the scree test indicated that only 1 factor was necessary. However, to maintain consistency, 2 factors were extracted for all participants. Again, Varimax rotation was employed for 5 of the participants and Oblimax rotation was employed for Participant 2.

The results of the factor analysis of the 10 dream-prompted memories yielded 2 memory types for 5 participants, i.e., no factors were split and the number of types equalled

Table 6
Memory Type and Number of Memories per Type, for each Participant

Participant	Memory Type 1	2	3
1	5	5	-
2	5	5	-
3	8	1	1
4	5	5	-
5	9	1	-
6	5	5	-
Mean	6.2	3.7	1.0

the number of factors. For Participant 3, however, one factor contained a significant proportion of negatively loaded events and was split into two types. The number of events per type is presented in Table 6.

The 2 memory types represent maximually independent families of affectively and motivationally similar memories. The z-score arrays corresponding to the 56 PEI items were calculated for each memory type (Step 2)and correlated with the PEI ratings from the dream (Step 3). The dream/memory type correlations for each participant and subsequent means are presented in Table 7. The memory type correlating most highly with the dream was then identified and averaged across participants (Step 4). The correlation for each of the most highly correlated memory families was individually significant ($p<.001$). A t test indicated that the mean correlation of the memory families correlating most highly with the dream was reliably different from zero [$M=.61$; $t(5)=8.732$, $p<.001$], confirming Hypothesis Two. (Because the correlations selected for analysis were determined on the basis of data examination, this t test was comparable to an *a posteriori* contrast. Therefore, it should be regarded as a a liberal assessment of the reliability of the mean correlation.)

Table 7
Correlations between the Dream and Memory Types, for each Participant.

Participant	Memory Type 1	2	3
1	.29	.41	-
2	.53	.77	-
3	.67	.73	.10
4	.59	.12	-
5	.55	.07	-
6	-.43	.60	-
Mean	.37	.45	.10

The following memories were selected from Memory Type 2 for Participant 1. This is the memory type which correlated most highly with the dream. The affects and motives most characteristic of this family were: attentive, vulnerable, lonely, guilty, worthless, confused affiliation.

> It was in spring, in grade 8. It was after school and I was with another group of kids in grade 8. They were all really popular and I was a really gawky kid, a real outsider. We were playing ball and I wasn't doing very well. They would toss me the ball every now and then and I would always miss it. One of the girls lived across the street from me and she was really pretty. We biked to school together but that was about it. I had a big crush on another guy and they kind of joked about me. It was really unsual for me to even be with that group.
>
> It was the Christmas before my brother died. I had given him a school sweater for Christmas in about October. The school was selling them and he didn't have enough money to buy them. I said I would buy it for him but that it would be his Christmas present. Then when it came to actually giving presents at Christmas all the presents were given out and I guess he forgot that I had said that. So he was really hurt and he said something about how I hadn't given him a present. I immediately felt really hurt and really guilty too, for not getting him a present. Cause I had thought maybe I could get him something small on top of it, but I didn't. Cause I had told him I would get him the sweater for Christmas. I remember saying that and feeling really guilty, you know, "remember the sweater", that kind of thing.
>
> This was after my brother died. My parent's bedroom was next to me, and my Mom was often in there with the blinds closed and she would just sit in there and cry. By herself. And I remember one time--I think I went in a couple times to try and comfort her and I guess maybe the first time she did accept it, she did let me hug

her--but I remember once going in and she just pushed me away, I think she said something like she just wanted to die and go to heaven and be with my brother .

These results support the prediction of Hypothesis Two that a family of dream-prompted memories would reliably correlate with the dream. Again, the question arises about features of this family of memories that differentiate it from the other family of memories. The fact that 2 memory types were obtained in the first place is, in large part, a function of the procedures used to elicit memories. Specifically, during dream reflection, participants were asked to characterize the affective quality of one part of the dream that felt most important, remember 5 events that were somehow "like that" quality, identify what else about that part of the dream felt important, characterize it's affective quality, and remember 5 more events. When asked to describe the second part of the dream, 4 out of the 6 participants reported a shift in the affective quality used as a prompt and, likewise, a shift in the affective and motivational properties of the memories recalled.

It was of interest to determine whether this procedural shift affected the memory family correlating most highly with the dream. Step 5 in the anlayses investigated this possibility. To do so, the rank order of memories (i.e., whether recalled first, second, etc.) for the 2 memory types was calculated and submitted to a Kruskal-Wallis Test of rank order comparisons. The results of this test revealed that the mean rank order for the highest correlating memory type was significantly lower than the mean rank order for the other memory type ($H(1)=16.45, p<.001$). Thus, the family correlating most highly with the dream was primarily comprised of the memories recalled to the first prompt.

C. Event/Memory Correspondence

If affectively and motivationally similar, recent and remote events are combined to form the dream, then not only should one family of daily events (Hypothesis One) and one family of memories (Hypothesis Two) correspond with the dream, but those event and memory families should also correlate with each other. Hypothesis Three, therefore, predicted a correlation between the event and memory families most highly correlated with the dream.

Table 8
Correlations between the Event and Memory Types Most Highly Correlated with the Dream, for each Participant

Participant	Event/Memory Correlations
1	.32
2	.84
3	.51
4	.48
5	.65
6	.78
Mean	.60

To test Hypothesis Three, the z-score arrays for the event types were correlated with the z-score arrays for the memory types. The correlations between the event family most highly correlated with the dream and the memory family most highly correlated with the dream were then calculated. These correlations are presented in Table 8. To assess the reliability of the mean correlation between these 2 families, a *t* test comparing that correlation to a mean of 0 was performed. The result indicated that the mean correlation of the highest event and memory families was significantly greater than 0 ($t=5.389$, $p<.01$). Again, these correlations are all individually significant (Participant 1, $p<.01$; the other participants, $p<.001$). Thus, the family of events corresponding most highly with the dream is reliably correlated with the family of memories corresponding most highly with the dream.

IV. Discussion

A. Affective and Motivational Correspondence

The obtained network of correlations among families of waking events and dreams is consistent with the model of dream/waking event correspondence proposed in this research. This model describes relatively complex relationships. Specifically, it was proposed that, at some time within the few days preceding the dream, events occur which create a feeling state or "tone" involving particular affects and motives. This affective and motivational tone then activates remote memories with similar qualities. During dreaming, the memories for both recent and remote events are combined in such a way that their affective and motivational properties are preserved in the narrative structure of the dream.

Although assertions about causal relationships among dreams and waking events are tentative given the correlational data of the present study, the overall pattern of results suggests relationships similar to those just described. First, it was found that the affects and motives of a family of daily events correlated with the affects and motives of the dream (Hypothesis One). Second, the affects and motives of a family of memories correlated with the affects and motives of the dream (Hypothesis Two). Third, the event family and the memory family correlated with each other (Hypothesis Three). Thus, the correlations were all as predicted by the model.

The obtained correlations between families of daily events and dreams suggests that recent affects and motives initiate dream affects and motives. The fact that the daily events occurred, and were recorded, prior to the dream means the reverse relationship is not possible. That is, it cannot be argued that the dream influenced the affective and motivational tone of the event family. Of course, it is possible that a third factor might account for the correlations between event families and dreams. One such factor might be a response bias. Perhaps, participants described their daily events and dreams in accordance with their typical or predominant affective and motivational experiences. However, if response bias was a factor affecting daily event/dream correspondence, then correlations between dreams and event

families characterizing the predominant (i.e., more typical) affective and motivational tone of the pre-dream period would have been obtained. Instead, correlations between dreams and families characterizing novel (i.e., less typical) affects and motives were obtained. This suggests that typical or predominant affects and motives did not influence the obtained correlations.

Another factor which might account for the obtained correlations between event families and dreams is a possible demand feature of the procedures. Perhaps participants were simply complying with perceived expectations that events and dreams be affectively and motivationally similar. While there are no data in the present study which unambiguously refute this possibility, it seems unlikely that demand features were in operation. Specifically, the factor analyses resulted in multiple event types for each participant. Participants would have had no way of knowing which event type would correlate with the dream. Furthermore, in order to determine which event type was affectively and motivationally similar to the dream, participants would have had to know which event type was characterized by nonroutine, incomplete goals, and was also emotionally engaging. It seems highly unlikely that someone could predict all these characteristics of dream/event correspondence. Thus, it would appear that neither demand features nor response bias could have affected the obtained correlations. According to the present model of dream/waking event correspondence, the correlations between event families and dreams occurred because the recent affects and motives influenced the affective and motivational tone of the dream.

The argument that waking affects and motives initiate the affective and motivational tone of the dream is also consistent with previous research. Specifically, there is evidence that when a particular affect is aroused prior to sleep, the affective tone of the dream corresponds with the pre-sleep affect (Goodenough, Witkin, Koulack and Cohen, 1975; Koulack, Prevost, DeKoninck, 1985; Kuiken, Rindlisbacher and Nielsen, 1984). There is also evidence that reminders of current goals presented during REM sleep induce goal related themes into ongoing dream mentation (Hoelscher, Klinger and Barta, 1980). Thus, the evidence from previous research is consistent with the correlations obtained in the present study. Together,

the evidence supports the argument that recent affects and motives influence the affective and motivational content of dreams.

On the other hand, the network of correlations obtained in this research does not unambiguously support the argument that remote affects and motives also influence the affective and motivational tone of the dream. One reason for this ambiguity is that, although reliable correlations between dreams and families of dream-prompted memories were obtained, the direction of the relationship between these 2 variables is uncertain. The present model proposes that remote events are combined with recent events to form the affective and motivational tone of the dream, implying that memories influence dreams. However, it is also possible that the memories were initiated after awakening and were not active as the dream was being formed. This explanation implies that dreams influence memories. Such a relationship would suggest that a mood congruence effect might account for the correlation between the dreams and memories. For example, perhaps the affect attended to during dream reflection activated the mood congruent memories that were recalled. It could also be argued that participants were simply complying with instructions to recall affectively similar memories. Indeed, the correlations obtained in this research are consistent with either the interpretation that the memories influenced formation of the dream or the interpretation that the dream or some other condition such as the reflection instructions influenced activation of the memories.

However, there is a feature of the present research which counteracts the mood congruence and demand interpretations. Specifically, it can be argued that affectively similar memories need not also be motivationally similar. That is, there is no reason to expect that an affective stimulus will elicit motivationally similar memories. Yet, the remote memories collected in this study were affectively and motivationally similar to the dream. In fact, a review of the PEI items common to both the memories and the dream revealed that, on the average, 70% of the items were affect related and 30% of the items were motive related. This proportion is congruent with the proportion of affect and motive items on the PEI; i.e., 65% are affect related and 35% are motive related. If participants are simply recalling mood

congruent memories or simply responding to demand characteristics of the procedure, then a greater proportion of the common items should be affect related. The fact that there is both affective and motivational congruence suggests that something other than mood congruence or demand characteristics accounts for the obtained correlation between the dream and the family of memories. According to the present model of dream/waking event correspondence, the correlations were obtained because the remote memories influenced the affective and motivational tone of the dream.

A second reason for the ambiguity of the relationship between remote memories and dreams is that there were 2 memory families obtained in the factor analyses. At first, this result seemed inconsistent with the conception of the proposed model. The memories from both families were prompted by the dream. Therefore, according to the model, they should all be more or less similar to the dream. The fact that one family of memories did not correlate with the dream implies that not all dream-prompted memories are affectively and motivationally similar to the dream. However, the 2 families obtained from the factor analysis may have been due to an inadvertent flaw in the procedures. Specifically, each participant was asked to identify a part of the dream segment that felt "most important" and to recall 5 memories associated with that part of the dream. Then the participant was asked to identify a second part of the dream segment that felt important and recall 5 more memories. For several participants, this shift in attention also resulted in a shift in the affective quality of the prompt and the "new" memory prompt elicted memories which did not correspond to the affective and motivational tone of the dream. Nevertheless, the first prompt was the one identified as most important, and the family of events corresponding to the dream was derived from memories elicted to this prompt. Thus, consistent with the present model, the emotionally significant memories prompted by the dream were associated with the affective and motivational tone of the dream. Perhaps the second set of memories were associated with a waking "interpretation" imposed on the dream by the participant, an interpretation which was not congruent with the affects and motives initially identified as characteristic of the dream. Although speculative, these results suggest that the memories elicited to the first

memory prompt may have influenced the affective and motivational tone of the dream.

The ambiguities of the relationship between dreams and memories are intrinsic to research addressing the role of remote memories in dream formation. Remote memories cannot be directly assessed or manipulated. Consequently, it must be assumed that memories recalled in association to the dream were influential in forming the dream. Because the dream's source memories are typically identified retrospectively, conclusions about their causal role in dream formation are tentative. However, by collecting and assessing recent events independently of remote events, the present study was able to minimize this limitation. Specifically, the correlations between dreams and families of recent events recorded prior to the dream suggests that recent affects and motives influence the affective and motivational tone of the dream. Similarly, the correlations between dreams and families of remote memories elicited from the dream suggest a correspondence between dreams and memories, even though they do not unambiguously suggest that the remote memories contributed to the formation of the dream. However, the remote memories elicited from the dream reliably correlated with the recent events collected prior to the dream. If the recent affects and motives initiated the affective and motivational tone of the dream, then they may also have initiated remote memories with similar affective and motivational properties. The memories recalled during dream reflection might then have been among those memories activated by the recent events. The 3-way correlations obtained in this study support the conception that recent and remote events influence the affective and motivational tone of the dream.

In addition to the network of correlations obtained in this study, there is evidence that recent and remote, affectively and motivationally similar memories combine to form the dream. According to Freud (1900/1976), condensation was the mechanism by which this combination occurred. He proposed 2 types of condensation. In one type of condensation, elements of several waking experiences are superimposed onto each other to form a composite dream image (Palombo, 1978). The resulting image is a combination of elements shared among the waking events and of elements unique to any one of the events. In the second type, only the shared elements of events are included in the dream image. The present data

appear consistent with the first type of condensation and suggest that the dream was a composite of affects and motives from the event and memory families. For example, when the affects and motives comprising each family and dream were reviewed, it was found that, among the common items with a z-score greater than 1, 50% were shared among all three (i.e., the dreams, families of events and families of memories), 20% of the items were shared between the dream and the event family only, and 30% of the items were shared between the dream and the memory family only. Thus, the dream included elements shared among the events and memories, as well as elements which were unique to both. Moreover, the affective and motivational properties of the event family were similar to those of the memory family, and both were similar to the dream. It seems that the events and the memories were superimposed on each other and the composite affective and motivational tone of the dream was the result.

B. Characteristics of Event Families Corresponding with the Dream

The results of the present study provide support for the hypothesis that affectively and motivationally similar, recent and remote events are combined during dreaming to form the affective and motivational tone of the dream. They also provide some clues about the characteristics of those families of affectively and motivationally similar events which become the source of the dream's affects and motives.

It was originally expected that the events which formed the family corresponding most highly with the dream would occur most often in the period 2 to 3 days prior to a dream. Thus, it was expected that a temporal factor might be associated with dream/waking event correspondence. However, the events comprising the families corresponding most highly with the dream occurred at equal intervals throughout the 10 day diary period, and there was no peak correspondence 2 to 3 days prior to the dream (see Table 4). This suggests that temporal factors (i.e., when an event occurs) do not play a role in determining an event family's correspondence with the dream. It is also of interest to note that there was no peak correspondence on the dream day or the day prior to the dream. This is the period of day

residue during which time, according to Freud, the dream is initiated. Instead, the present results suggest that there is a steady accumulation of affectively and motivationally similar events over several days prior to the dream. The implication is that, in order to fully understand the mechanisms of dream formation, researchers must consider the cumulative impact of multiple pre-dream events on the dream.

Even though there is an accumulation of affectively and motivationally similar events prior to the dream, these events do not represent the predominant affective and motivational tone of the pre-dream period. In fact, one characteristic which determined an event family's correspondence with the dream was whether it reflected novel rather than predominant affects and motives. The factor analysis of daily events revealed that there were 4 (or 5) event types for each person. The first factor for each participant represented the predominant affective and motivational tone of the 10 day period. The remaining 3 (or 4) factors represented types of events which departed from the predominant tone. For 5 out of the 6 participants in this study, the event family corresponding most highly with the dream was obtained from among those types which departed from the predominant affects and motives of the pre-dream period. Furthermore, the event families characterizing the non-predominant affects and motives were also scored as less routine that the families characterizing the predominant affects and motives. That is, the goals represented by the "departure" families were not the routine goals of daily life. Thus, the habitual, common affects and motives of daily life are not always the source of the dream. Instead, it appears that novel or distinctive, nonroutine affects and motives are a more likely source.

However, this result appears incongruent with research in which correspondences between enduring personality characteristics and themes in dream content have been demonstrated (e.g., Cartwright, 1974; Domino, 1976). A study by Domino (1976), in particular, reported substantial correlations between need oriented personality dimensions and judges' assessments of the presence of those characteristics in dreams. If predominant affects and motives reflect enduring personality characteristics, then the results of the present study are inconsistent with the results of the Domino study. One reason for the apparent

incongruity between the results of the present study and the results of the Domino study may be due to methodological differences. Specifically, Domino assessed the correlation between personality scales and average scores on 3 dreams from each participant. It would appear that this approach identifies more global aspects of dream/waking event correspondence. On the other hand, the present study assessed the correspondence between individual daily events and a single dream, an approach which would appear to identify more specific aspects of dream/waking event correspondence. Perhaps, when dream/waking event correspondence is assessed globally, with broad personality measures and average ratings of multiple dreams, it reflects the habitual and enduring patterns of personality. However, when dream/waking event correspondence is assessed more specifically, with assessments of discrete events and single dreams, it reflects the incorporation of more novel types of experiences. Indeed, there are speculations in the literature that dreams are more likely to refer to nonhabitual than to habitual activities (e.g., Cohen, 1979). The present data give credence to these speculations.

Not only are novel, nonroutine affects and motives characteristic of the event families departing from the predominant affective and motivational tone prior to the dream, but the results of the present study indicate that success at goal fulfillment also differentiated the departure families from the predominant mood families. Participants indicated that they were, on the average, only moderately successful at fulfilling the goals characterizing the departure families, but that they were very successful at fulfilling the goals characterizing the predominant families. This finding might account for why the families of events characterized by novel affects and motives are a more likely source of the affects and motives in the dream than the families characterized by predominant affects and motives. Perhaps the moderate success at goal fulfillment found in the present study means that participants were not fully successful in fulfilling their goals and, consequently, that their goals were incompletel fulfilled. It may be that incompleted goals remain psychologically relevant, in much the same way that incompleted tasks remain psychologically relevant. Incompleted tasks are remembered better than completed ones (Zeigarnik, 1955), presumably because they remain current in the thoughts of the individual. Similarly, it may be that incompleted goals remain

current, at least, in the affective and motivational experiences of an individual. Because the nonroutine, novel affects and motives characterizing the departure families were accompanied by such incomplete goal fulfillment, they remained current during dreaming and thus were "available" as a source of affects and motives. There is evidence from research investigating the relationship between stress and dreams which suggests that incompleted goals do affect dream content. For example, when participants were prevented from completing a difficult, intellectual task, there was a tendency for characteristics of the task to be incorporated into a following dream and for the pre-sleep affect to correspond with the dream affect (Koukack, Prevost and DeKoninck, 1985).

To this point, the findings of the present research have indicated that novel affects and motives, nonroutine goals and incomplete goal fulfillment are indeed associated with dream/waking event correspondence. However, these characteristics are not sufficient to predict which family of events forms the source of the dream's affects and motives. To determine specific predictors, the event types departing from the predominant affective and motivational tone were compared amongst themselves, and it was found that the departure family corresponding most highly with the dream was rated as more emotionally engaging than the other departure families. This indicates that, while novel affects and motives, nonroutine goals and incomplete goal fulfillment are important characteristics of the family corrresponding most highly with the dream, the events of a family with those characteristics must also be emotionally engaging in order for that family to influence the affective and motivational qualities of the dream.

The dream's correspondence with emotionally significant events has long been a tenet of many theories of dream formation (e.g., Freud, 1900/1976; Palombo, 1978; Cartwright, 1974; Greenberg and Pearlman, 1975) and empirical correspondences have also been demonstrated. Piccione, Jacobs, Kramer and Roth (1977), for example, found that daily activities percieved by judges as most prevalent in a dream were also the activities participants had rated as highly emotional. Thus, the results of the present study are consistent with previous theory and research which suggests that emotionally significant events of the day are

incorporated into dream content.

C. Conclusions

In conclusion, the results of this study indicate that affectively and motivationally similar, recent and remote events are combined during dreaming to form the dream. Furthermore, the affects and motives of the recent events appear to initiate this process. While causal interpretations of the present data are tentative, the results are consistent with the model of dream/waking event correspondence proposed in this study, as well as with previous research in the area of dream formation. The present data replicate findings that dreams are initiated by recent affects and motives, and that dream-prompted memories correspond to the affective and motivational properties of the dream. These replications are essential, given that research addressing dream/waking event correspondence has typically been difficult to replicate (Arkin & Antrobus, 1978).

The results of the present study have also extended previous research findings. Specifically, they have demonstrated that that novel affects and motives, nonroutine, incompleted goals, and emotional involvement are factors which play a role in initiating the affective and motivational tone of the dream. Also, the results demonstrate that multiple pre-dream events contribute to the affective and motivational tone of the dream, and that pre-dream events and dream-prompted memories are affectively and motivationally similar. Given the added complexity of this model, it is significant that results continue to support the concept that emotionally significant, recent and remote events become the source of the affects and motives in the dream.

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Appendix 1

Personal Events Inventory (PEI)

The PEI is designed to assess various aspects of the event you have just described. It includes statements and questions about your feelings, goals, actions and thoughts during the event. Please complete this questionnaire for the first event you identified and then go on to the second and third events.

On the top of the answer sheet please record the date, the time of the event and the event number. The items on this questionnaire are numbered consecutively and correspond to the item numbers on the answer sheet. Please be sure that the item number from the questionnaire matches the item number on the answer sheet as you proceed. Also, please use pencil on the answer sheet.

Section 1: Affect

Below are a number of words that describe different emotions or feelings. Using the following scale, please indicate the extent to which each word describes your feelings during this event. Blacken the appropriate number on the answer sheet, using the following scale.

1 = not at all descriptive of my feelings
2 = slightly descriptive of my feelings
3 = moderately descriptive of my feelings
4 = quite descriptive of my feelings
5 = extremely descriptive of my feelings

01 witty	10 afraid	19 nervous	28 happy
02 grouchy	11 exhausted	20 disgusted	29 defiant
03 sluggish	12 tense	21 attentive	30 playful
04 guilty	13 affectionate	22 sad	31 self-centered
05 angry	14 sorry	23 cheerful	32 relaxed
06 hopeless	15 shy	24 lonely	33 doubtful
07 energetic	16 elated	25 vulnerable	34 forgetful
08 surprised	17 contemptous	26 worthless	35 confused
09 resentful	18 carefree	27 regretful	36 confident

Section 2: Goals

Below are a number of words and statements describing different goal types. Please rate each goal type for the extent to which it applies to your goal(s) at the time of this event. Use the following scale to rate each goal type. Blacken the corresponding number on the answer sheet.

1 = not at all descriptive of my goals
2 = slightly descriptive of my goals
3 = moderately descriptive of my goals
4 = quite descriptive of my goals
5 = extremely descriptive of my goals

37. **Nurturance:** My goal was to gratify needs or give assistance. For instance: grant favours, provide food or drink; give aid or assistance, offer encouragement; teach or demonstrate a skill.

38. **Sexual interaction:** My goal was to establish or maintain sexual relations. For instance: engage in sexual intercourse, foreplay, (non-platonic) kissing or bodily contact; make advances, flirt, or otherwise further an erotic relationship.

39. **Affiliation:** My goal was to establish or maintain friendly relations. For instance: get married, become engaged; express love or affection; visit or converse with someone; shake hands, embrace, engage in other socially acceptable physical contact; cooperate; request help or assistance.

40. **Dominance:** My goal was to control or influence someone. For instance: command, request, suggest or persuade someone to change their behavior; nonphysically coerce or pressure someone; make rules, organize or govern others.

41. **Nonphysical aggression:** My goal was to insult, criticize, or offend someone. For instance: accuse, scold, ridicule, yell, or swear at someone; express dislike or rejection of someone.

42. **Physical aggression:** My goal was to physically harm someone or someone's property. For instance: assault or threaten to asault someone bodily or with a weapon; chase, capture or physically restrain someone; steal or destroy someone's possessions.

43. **Defiance:** My goal was to resist someone's control or influence. For instance: disobey or act contrary to felt obligations; resist someone's command, request, or suggestion; break laws, rules, or agreements; deceive someone.

44. **Nonphysical avoidance:** My goal was to covertly avoid or withdraw from social interaction. For instance: discontinue a conversation or withhold information from someone; avoid eye contact or socially acceptable forms of physical contact; quit joint activities (but

not physically withdraw, e.g., turn on the television to avoid social interaction).

45. **Physical avoidance:** My goal was to overtly avoid or withdraw from social contact. For instance: physically avoid being in the presence of someone; avoid or move away from a situation in which social interaction would be expected; quit joint activities (and physically withdraw, e.g., leave the room).

46. **Play:** My goal was to have fun or be amused without further purpose. For instance: participate in sports, dancing, or other games; attempt to entertain, amuse, or fascinate others (tell jokes or stories).

47. **Aesthetic enjoyment:** My goal was to enjoy non-sexual sensations. For instance: enjoy music, food, art, or movement; aesthetically organize my immediate environment (clothing, possessions, or surroundings).

48. **Achievment:** My goal was to master, know, or manipulate the environment as skilfully as possible. For instance: solve problems, study, practice skills.

49. **Self-enhancement:** My goal was to gain self-mastery or self-knowledge, or to be self-expressive. For instance: communicate feelings, change my behavior, seek feedback.

Section 3: Actions

Below are a number of words and statements describing general types of actions. Again, rate each statement for the extent to which it describes your action(s) in this event. Use the following scale and blacken the appropriate number on the answer sheet.

1 = not at all descriptive of my actions
2 = slightly descriptive of my actions
3 = moderately descriptive of my actions
4 = quite descriptive of my actions
5 = extremely descriptive of my actions

50. **Get:** In this event, I was trying to get (obtain, accomplish, attain, gain) something I did not already have. For instance: get a car, start a friendship.

51. **Keep:** In this event, I was trying to keep (maintain, continue) something I already had. For instance: keep my job, maintain my reputation.

52. **Restore:** In this event, I was trying to restore (repair, get back) something I had lost or damaged. For instance: repair a car, get back a loved one.

53. **Get rid of**: In this event, I was trying to get rid of (abandon) something I had. For instance: sell a car, abandon a friend.

54. **Prevent**: In this event, I was trying to prevent (stop) something from taking place or from continuing. For instance: dress warmly to prevent a chill, be silent to prevent a confrontation.

55. **Escape**: In this event, I was trying to escape (get away from) something that was taking place. For instance: quit an unpleasant job, escape from a destructive relationship.

56. **Avoid**: In this event, I was trying to avoid (ignore) something that had already taken place. For instance: avoid resolving a conflict, ignore someone's request for help.

Section 4: Attributes of Goal Fulfillment

Below are 9 questions pertaining to various attributes of goal fulfillment. Each statement has its own rating scale [noted in square brackets after the statement]. Only the extremes of each scale are given (e.g., 1 and 5). Use the following scale to determine intermediate values. Rate each statement for the extent to which it applies to your goals.

1 = not at all
2 = slightly
3 = moderately
4 = quite
5 = (extremely)

57. At the time of this event, how successful were you at fulfilling your goal(s)?
[1 = not at all successful to 5 = extremely successful]

58. At the time of this event, how committed were you to fulfilling your goal(s)?
[1 = not at all committed to 5 = fully committed]

59. Right now, how committed are you to fulfilling the goal(s) of this event?
[1 = not at all committed to 5 fully committed]

60. At the time of this event, how actively involved were you in fulfilling your goal(s)?
[1 = not at all involved (just observing) to 5 = totally involved]

61. How emotionally engaged were you during this event?
[1 = not at all engaged (aloof), to 5 = extremely engaged (emotionally aroused)]

62. Compared to other events in your life, how personally important is this event?
[1 = not at all important (pretty ordinary), to 5 = extremely important]

63. Was this event something you had been planning or anticipating for some time?
[1 = not at all planned/anticipated, to 5 = planned/anticipated for a long time]

64. Was your attempt to fulfill your goal a routine part of your life?
[1 = not at all routine, to 5 = extremely routine].

65. Did this event represent a change in the kinds of goals you normally strive for?
[1 = not at all, to 5 = very definitely].

Appendix 2

Personal Events Diary

The first part of this booklet contains instructions for identifying and recording 3 significant events from your day. Please follow the instructions as carefully as possible. When you have identified and recorded all 3 events events, go on to the Personal Events Inventory

1. Take a few moments to quietly relax.

2. As you relax, focus your attention on the inside of your body, in your throat, chest and stomach area particularily.

3. Next, ask yourself this question, "What happened today that feels important to me?" Pay attention to whatever occurs to you in response to this question and then find a word or a phrase to summarize it.

4. Next ask yourself, "What <u>else</u> happened today that feels important to me?" Again, pay attention to what ever occurs to you and find a word or phrase to summarize it.

5. Continue to reflect on the events in your day in this manner until nothing else occurs to you.

6. Now, select 3 events that feel most important to you. There need not be any special reason for your selection, just choose 3 events that seem to stand out or feel important in some way.

7. Report the first event into the tape recorder. Begin by stating the date, the time of day this event occurred and the event number (e.g., Friday, March 13, 2:30 in the afternoon, Event #1). Then describe your event. First identify the focal point (or most important point) in the event. Next describe the circumstances which led up to the focal point, what you were thinking and feeling during the event and the consequences or outcome of the event.

8. Record the second and third events in the same manner as the first.

9. Go on to the Personal Events Inventory.

Appendix 3

Wake-up and Dream Recall Procedures

Over the intercom:

(particiant's name) would you please wake up? *Pause*. Are you awake? I am going to come in to the chamber now. *Enter chamber*.

For the next minute or so, I would like you to lie completely still and remember everything that was going through your mind before I woke you. Try to remember everything that was occurring, in as much detail as possible. Let me know when you have remembered everything you can. *Wait for response*.

Would you please tell me everything that you can remember? *Record major events. When participant finishes, continue.* I would like to check the order of events with you right now. If any further details come to you as I review your dream, please let me know. *List order of events and verify with participant.*

Now I would like you to select a part of the dream that feels most important to you. Take a minute to review your dream and select one part that seems to stand out or feel most important to you. Let me know when you have done this. *Wait for response. Summarize the dream segment.*

Now I would like you to complete the PEI for that part of the dream. *Give participant the PEI and wait for him/her to complete it. If this is the first wake-up, allow participant to go back to sleep. If this is the second wake-up, proceed with the reflection interview.*

Appendix 4

Dream Reflection Interview

1. Introduction

Right now we are going to spend some time working with the dream segment you just identified. I will ask you to re-imagine that dream segment as vividly as possible and then reflect on various aspects of the segment. Remember that during the first memory session a few weeks ago I had you attend to both the visual and the bodily-felt components of your imagery? I would like you to do the same thing during this dream reflection session. I will ask you to pay attention to the feelings and bodily sensations you experience as you imagine the dream segment and then I will ask you to try to capture the quality of those feelings with a word, an image or a gesture. When you have done this, I will ask you to recall memories of moments from your life that are somehow like that word, image or gesture you identify. The memories that come to you need not seem logically related to your dream. I would like you to simply "allow" the memories to emerge from your feelings. Also, just as we did during the first memory session, I would like you to recall a specific event. If a general impression comes to you, just stay with that until a specific event associated with that general impression comes to mind.

Is that clear so far? Do you have any questions?

I will ask you to tell me the words, images or gestures you identify and the memories that occur to you. Initially I will only ask you to tell me a phrase or brief sentence to describe your memory; just enough information to identify the memory later on. Then, once we have completed the dream reflection, I will ask you to describe the memories in more detail.

I would like you to keep two things in mind as we go through this. One, remember that everything you tell me will be kept strictly confidential; no-one other than myself and Don Kuiken will have access to the tapes or questionnaires from this interview. Second, remember that if anything occurs to you during this time that you do not want to disclose, you just need to let me know that and I will not ask you to tell it to me.

Do you have any questions right now? Feel free to ask questions or make comments as we go along. 2. Relaxation and Revisualization

OK, let's begin by getting into a comfortable position. Close your eyes and let your body relax. Take a deep breath and breathe away any tension you are feeling right now. *Pause 10"*. Focus your attention on the inside of your body and just let it wander up and down, from your toes to your head and back again. Breathe easily as you do this. *Pause 45"*.

Now I would like you to go back to the dream you reported to me this morning. Let that dream unfold in your mind's eye as vividly as possible. Try to imagine it as though the dream were actually occurring, noticing its visual and bodily components. Let me know when you have been able to re-experience your dream in this way. *Pause--wait for cue to continue.*

Now focus your attention on the segment your identified earlier, the part where you *--Briefly identify segment.*

3. First Reflection Period

As you imagine this segment of your dream, begin to pay particular attention to whatever feelings and sensations you experience inside your body. Pay attention to any movements, gestures, or expressions which occur in the dream segment and also to any feelings which you or other characters are experiencing. Take a minute to imagine the dream segment and notice any feelings and sensations you have. Let me know when you have done this. *Pause--wait for cue to continue.*

Now, ask yourself this question: "What about this dream segment feels most important to me right now?" and see what occurs to you. Then let me know when something comes to you. *Pause--wait for cue to continue.*

Will you describe to me what it is that feels most important about the dream segment? *Wait for response.*

OK, pay attention to--*repeat what participant has reported*-- and notice what you are feeling. Don't try to do anything about those feelings, just pay attention to them. They may seem kind of fuzzy or unclear at first, but just notice what happens inside yourself as you attend to what is most important to you in the dream segment. *Pause 45"*.

Now, very carefully, find a word or an image or even a gesture that seems to fit what this whole feeling is like, the sheer quality of your feeling. Take a moment to reflect on the feeling and find something that seems to best fit your feeling. Choose whatever seems to capture what your feeling is like. Then let me know when something like that happens. *Pause--wait for cue to continue. If participant is unable to find a word/image/gesture, go to *1, pg. 20..*

4. Memory Elicitation

Will you tell me what it is that has occurred to you right now? *Wait for response.* OK, that word/image/gesture of *--repeat participant's choice--* captures what you are feeling, right?

Continue to pay attention to what you feel inside your body and then ask yourself these questions: "What has happened in my life that is like--*use participant's chosen word/image/gesture*--? What does--*participant's choice*-- remind me of?". See what memory comes to mind when you do this. Remember, it doesn't have to be logically connected, just allow a memory to come right from your feeling. Take as much time as you would like to do this, and then let me know when a memory has occurred. *Pause--wait for response. If no memory occurs, go to *2, pg. 20.*

Will you tell me a phrase or brief sentence to describe this memory and tell me when this event occurred? *Record response. If memory is too general, go to *3, pg. 20. If memory is private, go to *4, pg. 20.*

**Now return your attention to the feelings captured by the word/image/gesture of *--participant's choice*. Again, get a good sense of that feeling in your body and then ask yourself, "What else has happened in my life that is like--*participant's choice*--? What else does--*participant's choice*--remind me of?" Again, just simply allow a memory to come from that feeling and let me know when something comes to you. *Pause--wait for response.*

OK, can you tell me a phrase or brief sentence to describe this memory and tell me when this event occurred? **

*Repeat from ** to ** 2 or 3 times or until the participant states that no more memories come*

to mind for this particular word/image/gesture. Go on to Step 5 (Second Reflection Period) and repeat as per instructions. If participant has recalled at least 10 remote memories after 2 reflection/memory periods, go on to Step 6 (Memory Elaboration). If participant has not recalled at least 10 remote memories to the prompts identified during the reflection periods, go on to the next set of instructions.

Now I would like to focus on more specific elements of the dream segment. I would like to see what the actions, setting, objects, characters, etc. remind you of. *Prompts will depend on the content of the individual's dream segment.* Although we are not focusing specifically on feelings right now, I would like you to continue to pay attention to what happens inside you as you imagine or re-experience these elements of the dream-segment.

OK, lets start with the action. In the dream you are--*summarize main action*. Focus your attention on this action and try to get a sense of what that feels like. Then ask yourself "What has happened in my life that is like this?" Again, it doesn't have to be a logically connected memory, whatever occurs to you right now is just fine. Let me know when something occurs to you. *Pause--wait for response.*

Will you tell me a phrase to describe the memory? *Record response.*

OK, let's go back to the same action. What else are you reminded of?

Repeat "action" sequence until no further memories are recalled from this prompt (2 or 3 times is sufficient). Continue with other elements of the dream segment until 10 remote memories (in total) have been recalled or until participant reports he/she can recall no further memories. Go on to Step 6 (Memory Elaboration).

5. Second Reflection Period

Now I would like you to return your attention to the dream segment again. Run the entire segment through your mind's eye, paying attention to the movements, gestures or expressions which occur and also to any feelings you or other characters are experiencing. *Pause 10".*

Now ask yourself this question, "What <u>else</u> about this dream segment feels important to me?" and see what occurs to you. *Pause--wait for cue to continue.*

Will you describe to me what else feels important about the dream segment? *Wait for response.*

OK, pay attention to--*repeat what participant has reported*-- and notice what you are feeling. Again, don't try to do anything about those feelings, just pay attention to them. They may seem kind of fuzzy or unclear at first, but just notice what happens inside yourself as you attend to what else is important to you in the dream segment. *Pause 45".*

Now, very carefully, find a word or an image or even a gesture that seems to fit what this whole feeling is like, the sheer quality of your feeling. Take a moment to reflect on the feeling and find something that seems to best fit your feeling. Choose whatever seems to capture what your feeling is like. Then let me know when something like that happens. *Pause--wait for cue to continue. If participant is unable to find a word/image/gesture, go to *1, pg. 20, otherwise, repeat Step 4. Memory Elicitation.*

6. Memory Elaboration

Now I am going to go back to the memories you have recalled and ask you to tell me each one in more detail. Do you want to take a break for a few minutes before we continue? *Break if requested.* As with all other events you have reported during this study, I would like you to tell me the high point of this memory, the events that led up to the high point and the outcome. *Begin with 1st memory. Read descriptive phrase and wait for response. Continue until all memories have been detailed.*

7. Additional Prompts

*1. If no fitting words, images or gestures come to you right away, that's OK. Simply stay with the feeling and ask yourself "What is this feeling all about?" See what comes to you when you ask that question, see what comes right out of the feeling. Then let me know if something happens.

*2. Just take a bit of time right now to quietly reflect on all that that word/image/gesture of

--participant's choice-- means to you. Then just see what memory comes to you. Remember, this memory may not seem logically connected to your dream, so just be open to whatever comes to you.

*3. Can you think of a specific time when something like that happened/ when you experienced something like that?

*4. Can you describe what has come to you in a way that you feel comfortable, in a way that lets you keep it private but at the same time lets me know a little of what it's about? *If the participant responds 'no' then say:* OK, that's fine. Just take note of that memory to yourself right now and then when you feel ready, we will go on to something else.